

1 WHAT IS CLAIMED IS:

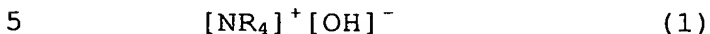
2

3 1. An aqueous dispersion for chemical mechanical
4 polishing obtained by mixing a water-soluble quaternary
5 ammonium salt, an inorganic acid salt and abrasive grains
6 into an aqueous medium.

1 2. The aqueous dispersion for chemical mechanical
2 polishing according to claim 1, wherein the water-soluble
3 quaternary ammonium salt, inorganic acid salt and abrasive
4 grains are contained in proportions of 0.005 to 5 % by mass,
5 0.005 to 5 % by mass and 0.01 to 10 % by mass, respectively.

1 3. The aqueous dispersion for chemical mechanical
2 polishing according to claim 1, which further comprises a
3 water-soluble polymer.

1 4. The aqueous dispersion for chemical mechanical
2 polishing according to claim 1, wherein the water-soluble
3 quaternary ammonium salt is a compound represented by the
4 following formula (1):



6 wherein R is an alkyl group having 1 to 4 carbon atoms.

1 5. The aqueous dispersion for chemical mechanical
2 polishing according to claim 1, wherein the inorganic acid
3 salt is an inorganic ammonium salt.

1 6. The aqueous dispersion for chemical mechanical
2 polishing according to claim 1, which is used in polishing
3 of a silicon type film.

1 7. A chemical mechanical polishing process
2 comprising a step of polishing a surface to be polished
3 with the aqueous dispersion for chemical mechanical
4 polishing according to claim 1.

1 8. The chemical mechanical polishing process
2 according to claim 7, wherein a first specific removal rate
3 ratio represented by a ratio of the removal rate of a
4 polysilicon film to the removal rate of a silicon oxide
5 film in the case where the silicon oxide film and the
6 polysilicon film are polished under the same condition, is
7 at least 30.

1 9. The chemical mechanical polishing process
2 according to claim 7, wherein a second specific removal
3 rate ratio represented by a ratio of the removal rate of a
4 polysilicon film to the removal rate of a nitride film in
5 the case where the nitride film and the polysilicon film
6 are polished under the same condition, is at least 50.

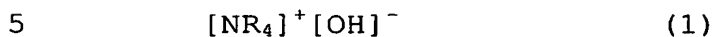
1 10. A process for producing a semiconductor device,
2 wherein the semiconductor device is produced by conducting

3 step of polishing a surface to be polished on a
4 semiconductor substrate with the aqueous dispersion for
5 chemical mechanical polishing according to claim 1.

1 11. An aqueous dispersion for chemical mechanical
2 polishing obtained by mixing at least a water-soluble
3 quaternary ammonium salt, another basic organic compound
4 than the water-soluble quaternary ammonium salt, an
5 inorganic acid salt, a water-soluble polymer and abrasive
6 grains into an aqueous medium.

1 12. The aqueous dispersion for chemical mechanical
2 polishing according to claim 11, wherein the water-soluble
3 quaternary ammonium salt, another basic organic compound
4 than the water-soluble quaternary ammonium salt, inorganic
5 acid salt, water-soluble polymer and abrasive grains are
6 contained in proportions of 0.005 to 10 % by mass, 0.005 to
7 10 % by mass, 0.005 to 8 % by mass, 0.001 to 5 % by mass
8 and 0.01 to 10 % by mass, respectively.

1 13. The aqueous dispersion for chemical mechanical
2 polishing according to claim 11, wherein the water-soluble
3 quaternary ammonium salt is a compound represented by the
4 following formula (1):



6 wherein R is an alkyl group having 1 to 4 carbon atoms.

1 14. The aqueous dispersion for chemical mechanical
2 polishing according to claim 11, wherein the inorganic acid
3 salt is an inorganic ammonium salt.

1 15. The aqueous dispersion for chemical mechanical
2 polishing according to claim 11, which is used in polishing
3 of a silicon type film.

1 16. A chemical mechanical polishing process
2 comprising a step of polishing a surface to be polished
3 with the aqueous dispersion for chemical mechanical
4 polishing according to claim 11.

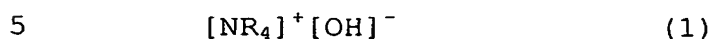
1 17. The chemical mechanical polishing process
2 according to claim 16, wherein a first specific removal
3 rate ratio represented by a ratio of the removal rate of a
4 polysilicon film to the removal rate of a silicon oxide
5 film in the case where the silicon oxide film and the
6 polysilicon film are polished under the same condition, is
7 at least 30.

1 18. The chemical mechanical polishing process
2 according to claim 16, wherein a second specific removal
3 rate ratio represented by a ratio of the removal rate of a
4 polysilicon film to the removal rate of a nitride film in
5 the case where the nitride film and the polysilicon film
6 are polished under the same condition, is at least 50.

1 19. A process for producing a semiconductor device,
2 wherein the semiconductor device is produced by conducting
3 a step of polishing a surface to be polished on a
4 semiconductor substrate with the aqueous dispersion for
5 chemical mechanical polishing according to claim 11.

1 20. A material for preparing an aqueous dispersion
2 for chemical mechanical polishing, comprising a first
3 aqueous dispersion material (I) obtained by mixing at least
4 a water-soluble quaternary ammonium salt and an inorganic
5 acid salt into an aqueous medium, and a second aqueous
6 dispersion material (II) obtained by mixing at least a
7 water-soluble polymer and another basic organic compound
8 than the water-soluble quaternary ammonium salt into an
9 aqueous medium, wherein abrasive grains are mixed into at
10 least one of the first aqueous dispersion material (I) and
11 the second aqueous dispersion material (II), and the
12 aqueous dispersion for chemical mechanical polishing is
13 prepared by both of the first aqueous dispersion material
14 (I) and the second aqueous dispersion material (II).

1 21. The material for preparing an aqueous dispersion
2 for chemical mechanical polishing according to claim 20,
3 wherein the water-soluble quaternary ammonium salt is a
4 compound represented by the following formula (1):



6 wherein R is an alkyl group having 1 to 4 carbon atoms.

1 22. The material for preparing an aqueous dispersion
2 for chemical mechanical polishing according to claim 20,
3 wherein the ratio [(I)/(II)] of the first aqueous
4 dispersion material (I) to the second aqueous dispersion
5 material (II) is 30/70 to 70/30 in terms of a mass ratio.

1 23. The material for preparing an aqueous dispersion
2 for chemical mechanical polishing according to claim 20,
3 wherein the inorganic acid salt is an inorganic ammonium
4 salt.